

# 2009 Year in Review

## General Summary

Compared to recent years in which warmer than normal conditions dominated much of the time, 2009 brought more of a mixed bag of temperatures where cooler than normal months (January, March, July) alternated with warmer than normal months (February, May, August, November). In the end, the year ended up very close to average in terms of temperature.

Precipitation-wise, the year started out rather dry (as in 2007 and 2008); February made the top ten driest list for both Richmond and Norfolk. However, a significant shift to wet conditions occurred from late summer through the remainder of the year. Typically, wet weather during the late summer and fall over the Carolinas, Virginia, and Maryland is associated with tropical systems; things were different this year as the heavy rain events resulted primarily from nor'easters and persistent easterly flow. The wet finish to the year was the most pronounced across Hampton Roads and northeast North Carolina, the August through December period being the wettest on record, making the year the 4<sup>th</sup> wettest on record at Norfolk.

By convention, snowfall is calculated by season rather than by calendar year, so the period of interest is the 2008-09 season (not including the December 2009 storm). As in the past several seasons, snowfall amounts came in below average (and median) at all of our major climate sites. It wasn't a total loss for snow enthusiasts however, as an early March 2009 snowstorm dumped over 6 inches of snow at Richmond, the biggest single storm snow total since 2000. This was later eclipsed by the December 18-19<sup>th</sup> storm, which will be discussed later this year at the conclusion of the 2009-2010 winter season.

# **Richmond, VA Records & Highlights**

**(Period of Record 113 yrs/1897-2009, (for precipitation 123 yrs))**

**Record Highs:** One set, 82 F on March 9th

**Record Low Maximums:** Three set, highs of just 54 F, 49F, 48 F from October 15<sup>th</sup>-17<sup>th</sup>.

**Record Lows:** Two set, 11F on March 3<sup>rd</sup> and 10F on March 4<sup>th</sup>. (the 10 F on the 4<sup>th</sup> is new all-time record low for the month).

**Record High Minimums:** Five set, 61F (Mar 8<sup>th</sup>), 67F (Apr 26<sup>th</sup>), 68F (May 9<sup>th</sup>), 74F (Aug 19<sup>th</sup>), 76F (Aug 21<sup>st</sup>).

**Daily Precipitation:** Two set, 0.93”(Mar 1<sup>st</sup>), 3.51” (Nov 12<sup>th</sup>). (the 3.51” sets a new all-time daily record for the month of November).

**Daily Snowfall:** One set, 6.0”(Dec 18<sup>th</sup>).

## **Other Highlights:**

- The March 1-2 snowstorm (6.3”) brought the seasonal total to 6.6” (2008-09 season), the snowiest in three years but still below average and median for the 6<sup>th</sup> consecutive season. The December 18-19<sup>th</sup> snowstorm brought a storm total of 7.4”, the largest single storm total since January of 2000.
- The Fall season (Sep-Nov) ended up very wet, (15.65”); this did not qualify as a top 10 wet Fall, but in terms of number of days with measurable precipitation (35), this ties 1996 as the 3<sup>rd</sup> most. (only 1888 (38 days) and 1889 (41 days) had more during the Fall season.
- Summer temperatures ended up very close to average overall, a change from the past 4 summers which were generally very warm. The number of days with temperatures of 90F or higher totaled 33, a bit less than average (42), and much less than each of the years 2005-2008 when more than 50 such days occurred.

# Norfolk, VA Records & Highlights

(Period of Record 136 yrs/1874-2009)

**Record Highs:** none set.

**Record Low Maximums:** Three set, highs of just 29F (Mar 3), 50F, 53 F (Oct 17<sup>th</sup> and 18<sup>th</sup>).

**Record Lows:** none set.

**Record High Minimums:** Three set, 70F (May 9<sup>th</sup>), 77F (Aug 20<sup>th</sup>), 69F (Oct 24<sup>th</sup>).

**Daily Precipitation:** Six set, 1.21" (May 17<sup>th</sup>), 3.40" (Aug 22), 3.54" (Sep 8<sup>th</sup>), 1.62" (Oct 15<sup>th</sup>), 2.31" (Nov 11), 4.90" (Nov 12<sup>th</sup>) .

**Daily Snowfall:** none set.

## Other Highlights:

- The Fall season (Sep-Nov) ended up very wet, (20.18"); 6<sup>th</sup> wettest on record. It was also the wettest Aug-Dec period on record. The wet Fall brought the annual total to 64.66", ranking 2009 as the 4<sup>th</sup> wettest year on record.
- Eight days in 2009 recorded 2 inches or more of precipitation, the most on record (previous record had been 7 in 1937).
- Summer temperatures ended up very close to average overall, a change from the past 3 summers which were generally very warm. Only one day reached 95F or higher, well below the average of 9 days and much less than each of the years 2006-2008 when 13, 11, and 9 such days were recorded respectively.

# Tabular Summary of ANNUAL Data

## Richmond, VA

Richmond, VA 2009 Summary Data											
	TEMPERATURE				PRECIPITATION				Significance / Remarks		
	ACTUAL			Dep	Total (in)		# Days		Temperature	Precipitation	
	Max	Min	Avg		Actual	Dep	.01"+	Dep			
Jan	44.5	26.0	35.2	-2.2	1.49	-1.62	8	-2			
Feb	53.9	30.4	42.2	2.3	0.74	-2.18	4	-5			5th driest
Mar	56.9	36.6	46.7	-0.9	4.26	0.50	11	1			
Apr	70.6	47.1	58.9	1.0	2.56	-0.51	11	1			
May	78.4	57.9	68.1	2.0	3.71	0.02	15	4			
Jun	85.0	66.0	75.5	1.3	4.32	0.55	10	0			
Jul	87.4	66.6	77.0	-1.4	3.39	-1.52	11	0			
Aug	89.5	70.3	79.9	2.9	4.04	-0.79	9	0	9th warmest		
Sep	79.6	60.3	69.9	-0.3	2.46	-1.32	9	1			
Oct	68.8	49.1	59.0	-0.1	3.59	0.25	13	6			
Nov	62.1	43.8	53.0	3.5	9.60	6.46	13	5			#1 wettest
Dec	47.9	30.8	39.4	-1.2	8.16	4.95	11	2			#1 wettest
ANNUAL	68.7	48.7	58.7	0.6	48.32	4.62	125	12			
*Winter	50.9	30.4	40.6	1.4	6.30	-2.94	22	-6			
Spring	68.6	47.2	57.9	0.7	10.53	0.01	37	6			
Summer	87.3	67.6	77.5	0.9	11.75	-1.75	30	0			
Fall	70.2	51.1	60.6	1.0	15.65	5.33	35	11			

## Norfolk, VA

Norfolk, VA 2009 Summary Data											
	TEMPERATURE				PRECIPITATION				Significance / Remarks		
	ACTUAL			Dep	Total (in)		# Days		Temperature	Precipitation	
	Max	Min	Avg		Actual	Dep	.01"+	Dep			
Jan	45.4	30.1	37.7	-2.9	1.82	-1.71	9	-2			
Feb	53.0	33.1	43.0	0.8	1.26	-1.88	5	-5			10th driest
Mar	55.6	39.4	47.5	-1.5	5.28	1.57	13	2			
Apr	69.6	49.3	59.4	1.2	2.28	-0.89	10	0			
May	77.4	60.5	68.9	2.3	4.77	1.23	14	4			
Jun	83.1	68.0	75.6	0.7	5.81	1.97	9	0			
Jul	85.8	69.3	77.6	-1.5	2.47	-2.79	11	0			
Aug	86.6	72.5	79.5	1.6	13.22	7.80	17	7			3rd wettest
Sep	77.0	65.2	71.1	-1.2	7.77	3.38	10	2			
Oct	70.5	54.5	62.5	0.6	3.21	-0.19	10	2			
Nov	61.8	48.7	55.3	2.8	9.20	6.26	14	6			#1 wettest
Dec	50.9	36.8	43.9	-0.2	7.57	4.45	11	2			#1 wettest
ANNUAL	68.0	52.3	60.2	0.2	64.66	19.34	133	17			4th wettest
*Winter	51.8	34.1	43.0	0.7	6.91	-2.89	24	-6			
Spring	67.5	49.7	58.6	0.6	12.33	1.91	37	6			
Summer	85.2	69.9	77.5	0.3	21.50	6.99	37	6			
Fall	69.7	56.2	62.9	0.7	20.18	9.52	34	10			6th wettest

\* **“Dep”= Departure** from the 60 year averages (1950-2009). These values were used instead of the shorter period, 1971-2000 averages, to provide a longer period of record as all three main climate sites have been located at their present Airport locations since the late 1940s. Temperature departures are shaded orange for warmer than average and blue for cooler than average. Similarly, precipitation departures are shaded green for wetter than average and tan for drier than average.

\* By convention, meteorological winter is defined as Dec-Feb, as such, **“Winter”** values calculated here are for the 2008-09 season (Dec 2008, Jan 2009, Feb 2009).

# Tabular Summary of ANNUAL Data (continued)

## Salisbury, MD

Salisbury, MD 2009 Summary Data										
	TEMPERATURE				PRECIPITATION				Significance / Remarks	
	ACTUAL			Dep	Total (in)		# Days		Temperature	Precipitation
	Max	Min	Avg		Actual	Dep	.01"+	Dep		
Jan	40.4	21.8	31.1	-4.5	1.17	-2.28	9	-2		
Feb	50.5	25.5	38.0	0.6	0.24	-3.08	5	-5		
Mar	54.2	31.6	42.9	-1.6	1.43	-2.77	11	0		
Apr	66.7	42.3	54.5	0.4	4.44	1.08	10	0		
May	74.6	53.5	64.0	1.2	5.18	1.68	14	3		
Jun	80.0	62.2	71.1	-0.7	6.57	2.92	13	4		
Jul	85.7	63.7	74.7	-1.9	1.88	-2.65	7	-3		
Aug	86.5	68.1	77.3	2.2	5.73	0.72	10	1		
Sep	75.9	58.3	67.1	-1.2	4.39	0.42	14	6		
Oct	67.9	48.6	58.3	0.9	3.70	0.17	8	0		
Nov	60.0	43.2	51.6	3.6	5.14	1.91	12	3		
Dec	46.6	30.5	38.6	-0.5	4.21	0.58	9	-1		
ANNUAL	65.8	45.8	55.8	-0.1	44.08	-1.42	122	6		
*Winter	47.8	26.5	37.1	-0.2	5.26	-5.13	24	-6		
Spring	65.2	42.5	53.8	0.0	11.05	-0.02	35	3		
Summer	84.1	64.6	74.4	-0.1	14.18	0.98	30	1		
Fall	68.0	50.0	59.0	1.1	13.23	2.51	34	9		